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### Brick Muqarnas on Rum Saljuq buildings

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Richard Piran McClary

## Brick Muqarnas on Rûm Saljuq buildings - The introduction of an Iranian decorative technique into the architecture of Anatolia

The aim of this paper is to examine the form, function and decoration of the small and poorly understood corpus of brick *muqarnas* that survive from the early stage of Rûm Saljuq architecture in Anatolia. These date from the period between the last quarter of the sixth / twelfth century to the first quarter of the seventh / thirteenth centuries. The original source of the *muqarnas* form has been much debated by scholars, with opinions as to its origin ranging from North Africa to Baghdad and Eastern Iran.<sup>1</sup> It is clear that *muqarnas* cells came to be integrated into the architectural aesthetic of Islamic Anatolia from the mid to late sixth / twelfth century onwards.<sup>2</sup> By the middle of the seventh / thirteenth century almost all but the western coast and part of the northern coast of Anatolia was part of the Rûm Saljuq Empire, but there were a number of other smaller Turko-Muslim states in the region during the early period.<sup>3</sup>

Although the majority of the *muqarnas* in Anatolia were built in stone, there is a small corpus of brick *muqarnas*. The lack of a stone building tradition in Iran indicates that the stone *muqarnas* were the work of Anatolian or Syrian craftsmen. This paper aims to demonstrate that the much less common brick examples were most likely the work of craftsmen from Iran.. The surviving examples are clustered in the central Anatolian heartland of the Rûm Saljuqs, between Konya to the west and Sivas to the east. Given the prolific, almost ubiquitous nature of the stone *muqarnas* hoods on the portals of tombs, madrasas, caravanserais and mosques, it is puzzling why no brick *muqarnas* portals appear to have been built in Anatolia in the Saljuq period. There does not appear to have been a pre-existing tradition of decorative brick construction in the Byzantine and Armenian buildings of central Anatolia. In western Anatolia the *opus mixtum* technique of brick and stone construction was widespread but it did not tend to fea-

ture the decorative brick bonds found in the Islamic architecture of Iran. This indicates that it was non-indigenous craftsmen, probably from Iran,<sup>4</sup> that were responsible for the construction of the few surviving examples of the art of brick decoration in Anatolia. The brief process of efflorescence that starts in the late sixth / twelfth century is followed by almost complete abeyance after the mid-seventh / thirteenth century.

The basic building blocks of brick *muqarnas* compositions consist of cells used singly, or in combination with one or two others. They have the appearance of a rectangular panel with a triangle above that has had the tip bent forward 90° giving the cell a triangular plan (fig. 1). When two cells with equilateral triangle plans are employed next to each other a rhombus plan is created (fig. 1.B). When isosceles triangles are used the resulting plan is an irregular polygon (fig. 1.C). In each case the basic unit has a wide base and narrow pointed top. In addition there is the open rhombus, where a single spine rises from one corner of the rhombus plan and spreads outward and upward in the manner of an unsupported fan vault (figs. 1.A & 2).

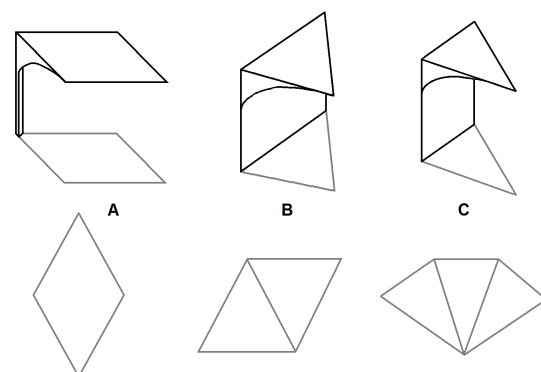


Figure 1: Basic cell forms (black) and plans (grey) © R. McClary 2013

The corpus can be divided into three functional types of brick *muqarnas*. There are brackets, of which the only surviving examples are the tall projecting *muqarnas* brackets on the exterior of the palace kiosk of Kiliç Arslan II in Konya (c.569 AH/ c.1174 CE). *Muqarnas* are also used as a cornice, on the cylindrical shaft below the balcony at the minaret of the Great Mosque in Sivas (609 AH/ 1212-13 CE) and the Eğri Minaret in Aksaray (616-34 AH /1219-37 CE). Another example is the cornice at the top of the octagonal shaft of the Bekar Sultan Tomb in Gülağaç, outside Aksaray (c. early seventh / thirteenth century). The third type of brick *muqarnas* consists of hoods at the top of niches. There are shallow *muqarnas* hoods at the top of the flanking shallow niches on the four facets of the Melik Gazi Tomb in Pınarbaşı, 70km east of Kayseri (c. late sixth/ twelfth century). There is also a pair of *muqarnas* topped niches in the east and west walls of the north *iwān* of the 'Izz al-Dīn Kay Kā'ūs I Hospital in Sivas, founded in 614 AH /1217 CE.<sup>5</sup>

It is a diverse, if small, corpus that consists of deep and shallow cells of both angular and curvilinear forms in single tier and multi-tier compositions. Although the primary material under discussion is brick, there are a number of other materials involved in the construction process. These include lime or gypsum based mortar used to bond the bricks together and affix the glazed elements, while the *muqarnas* brackets at the Qilij Arslān II Palace in Konya are reinforced with large timber beams. With the exception of the Melik Gazi Tomb in Pınarbaşı and the Konya palace brackets, the surviving examples of brick *muqarnas* feature glazed tile intarsia, either flat turquoise tiles of varying shapes or green and turquoise glazed bowls set into the mortar bed.

### **Qilij Arslān II Palace Kiosk, Konya**

The currently freestanding tower in Konya formed part of the palace of the Rüm Saljuq Sultan Qilij Arslān II (r. 551-588 AH /1156-1192 CE). It was built into the northern section of the pre-existing Byzantine citadel wall in the second half of the sixth/ twelfth century.<sup>6</sup> The brackets that supported the first floor balcony of the palace consist of six projecting rows of cells. Two

of the surviving examples have a similar overall form but are made up of different combinations of cells (figs. 2 & 3). The north, east and west facets of the tower featured three brackets each, one at each end and one in the middle. A photograph by Gertrude Bell, taken in 1905<sup>7</sup> shows the structure in a far better state of preservation than it is now. The building originally had a further two brackets in a similar manner on the ends of the north face of the second floor to support the overhanging eaves of the roof, but they are now lost. The lower portion of the tower, up to the start of the arching brickwork and around the brackets, was plastered and painted with red geometric patterns matching the decorative brickwork above. Fragments of this survive and can be seen in fig. 2.

The structural support of the *muqarnas* brackets is provided by large cantilevered (projecting) beams that are braced by smaller beams sitting in a V notch on the bottom of the cantilever beam. This acted as an internal support and a matrix for the brick *muqarnas* to be built around. Due to losses to the structure it can be seen that within each bracket there are two cantilever beams side-by-side but slightly apart. These retain their original round form in the north bracket (fig. 2), but are squared off at the top and bottom in the south bracket.<sup>8</sup> A number of the rising joints of the bricks of the *muqarnas* cells, as well as the decorative brickwork above the brackets, have had the mortar excavated to enliven the appearance. This decorative technique is employed across structural types and can be found on the *muqarnas* of the Melik Gazi Tomb in Pınarbaşı and the Bekar Sultan Tomb in Gülağaç.

The Konya palace brackets demonstrate the presence of craftsmen with the technical ability to create brick *muqarnas* with significant horizontal projection and load bearing capacity, as well as providing evidence of their use on a royal building. The sixth/ twelfth-century use of *muqarnas* in the context of royal structures is not a phenomenon reserved for Saljuq, or even Islamic architecture. The ceilings of both the Norman Capella Palatina in Palermo (c. 1140)<sup>9</sup> and the (lost) Mouchroutas audience hall in the Byzantine Palace in Constantinople (c. 1161)<sup>10</sup> also made use of *muqarnas* in a royal context. All three structures speak to the

prestige associated with the complex and innovative form of *muqarnas* in sixth-/ twelfth-century courtly circles that transcended cultural and religious boundaries.



Figure 2: Qilij Arslan II Palace, Konya © R. McClary 2013

Konya South bracket (left)		Konya North bracket (right)	
Row	Cell Type	Row	Cell Type
6/	2x wide triangle (at 45°) with central open rhombus	6/	2x rhombus (facing in) with central open rhombus
5/	2x wide triangle (at 45°) with central open rhombus	5/	3x triangle (central one recessed)
4/	2x rhombus (facing out) with central open rhombus	4/	2x rhombus (facing out)
3/	2x rhombus (facing out) with central open rhombus	3/	2x rhombus (facing in) with central open rhombus
2/	1x triangle	2/	2x rhombus (facing out)
1/	2x blind shouldered arch panels	1/	1x triangle flanked by blind shouldered arch panels

Figure 3: Table of Konya Palace muqarnas cells © R. McClary 2013

### Bekar Sultan Tomb, Gülağaç (Aksaray)

The Bekar Sultan Tomb near Gülağaç in Aksaray province, stylistically attributed to the first quarter of the seventh/ thirteenth century, is an octagonal tomb.<sup>11</sup> The base and most of the shaft are stone, while the upper section of the shaft, the *muqarnas* band and the roof are constructed of baked brick. Glazed turquoise intarsia are set in guard bands above and below the two bands of muqarnas. The muqarnas consist of two tiers, with the lower tier alternating between blank panels and triangle plan cells. The upper cells are tripartite, with the exception of the eight corner cells, which are bipartite rhombus plan cells (fig. 4). All the rising joints except those that touch the small square bricks forming the outline of the cells have deep voids that appear black against the baked brick, enlivening the appearance of the composition.

The form and function of the *muqarnas* can be related to those of the ones used on the minarets in Sivas and Aksaray that are discussed below. In each case the *muqarnas* cornice increases the surface area above a shaft in order to provide a larger platform for the upper section of the building. The functional role of the Bekar Sultan Tomb cornice is to increase the size of the roof in order to shed water runoff away from the walls of the tomb and thus reduce erosion of the brick Kufic band of epigraphy below. This structure, like the 'Izz al-Dīn Kay Kā'ūs I Hospital in Sivas, is constructed from a variety of media, including stone and glazed tiles as well as brick, with the *muqarnas* being just one part of the decorative schema.

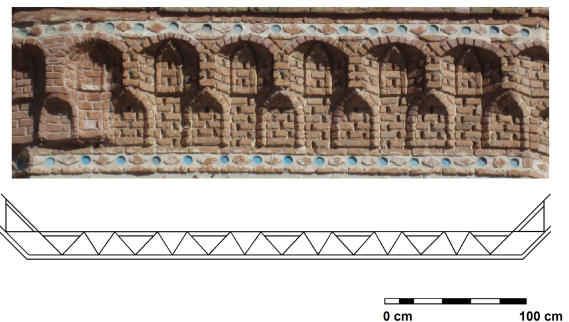


Figure 4: Bekar Sultan Tomb, Gülağaç - muqarnas © R. McClary 2013

### Sivas Great Mosque minaret

The brick minaret at the east end of the *qibla* wall of the stone-built Great Mosque in Sivas was probably added to the pre-existing mosque structure in 609 AH /1212-13 CE.<sup>12</sup> It is unusual in both its location, on the *qibla* wall, and the fact that, unlike most Anatolian minarets, it does not have a square base topped by an octagonal section supporting a cylindrical shaft. Instead it features an octagonal base supporting the cylindrical shaft in the manner of the Gulpayagān Minaret in Iran, built in c. 493 AH /1100 CE.<sup>13</sup> The use of brick *muqarnas* projections to support the balcony is first employed on minarets with cylindrical shafts in Iran in the latter half of the fifth/ eleventh century, an early example being the Pa Minār Mosque minaret in Zavāreh (461 AH /1068-69 CE).<sup>14</sup>

The upper section of the shaft has one band of *muqarnas* cells and three increasingly larger bands of V projections, each band consisting of five courses of

brick. The *muqarnas* cells alternate between wide and narrow, with all twenty-four cells having a triangular plan (fig. 7).<sup>15</sup> The V plan created by the *muqarnas* is added to by the addition of an extra set of V shaped projecting bricks between each cell. The purpose of these is to narrow the gap that the bricks forming the circular platform above have to span. The faces of the cells are decorated with irregularly alternating glazed strapwork or unglazed geometric patterns (fig. 6). Although many of the geometric compositions decorating the cells are constructed from triangular components, (figs. 5.A, 5.B & 5.C) the more complex pattern consisting of kite shaped elements was designed using a triangle-based grid. It consists of six subdivided triangles arranged to form a hexagon, with the bottom half of the bottom two triangles missing from the final composition (fig 5.G).

There are at least eight different unglazed patterns as well as a ninth that features fragmentary traces of glaze. There are also three turquoise glazed strapwork patterns, two of which are employed on the narrow cells, making a total of twelve patterns. The most intact glazed design is illustrated in fig 5.E. None of the unglazed brick patterns appear to be repeated although several cells are missing entirely or are too fragmentary to determine the nature of their patterns. What the losses do allow is a better understanding of the method of construction. In contrast to the rest of the surviving brick *muqarnas* of the period in Anatolia, the forms of the Sivas minaret *muqarnas* cells are constructed with mortar. The edges of the cells are delineated with small square bricks and the bottom with thin rectangular bricks. The sides of the upper projecting elements are reinforced with larger bricks to support the V shaped projections above. There is no visible evidence of internal timber reinforcement as seen at the *Qilij Arslan* II Palace brackets in Konya, but there is a band of holes at the top of the shaft which were probably used as put-log holes for the wooden scaffolding required for the construction of the *muqarnas*.<sup>16</sup> They remain as voids in order to provide ventilation for the minaret shaft. Between the *muqarnas* and the scaffolding holes there is a decorative band of green glazed bowl like inserts.<sup>17</sup>

The patterns, both glazed and unglazed, that are employed on the *muqarnas* and the rest of the minaret are very similar to those seen at the nearby 'Izz al-Dīn Kay Kā'ūs I Hospital, in the two north *iwān* niches and the tomb (617 AH /1220 CE) in the south *iwān* of the building. Above the west window of the tomb façade two cartouches carry the name of Aḥmad bin Abū Bakr al-Marandī, a craftsman whose *nisba* indicates he was from Marand in north-west Iran. The distinctive nature of the patterns and epigraphy on the tomb, the north *iwān*'s *muqarnas* niches and the Great Mosque minaret points towards the same group of craftsmen being responsible for all three structures.<sup>18</sup> That Iran is the source of the forms and techniques of brick *muqarnas* construction in Anatolia is the unavoidable conclusion when faced with the number of closely related antecedent brick *muqarnas* compositions in Iran. The wide rising joints void of mortar that are seen at the Konya palace and the tombs in Pınarbaşı and Gülüğaç occur as early as the late fifth/ eleventh century on the exterior of the Shaykh Shibli Tomb at Demavend.<sup>19</sup> Furthermore, the use of bands of brick *muqarnas* to corbel out from cylindrical minaret shafts to the balcony is also a technique developed in the region of Greater Iran.<sup>20</sup> Due to the lack of written accounts concerning the working methods and movement of craftsmen, the few signatures of craftsmen and stylistic comparisons of surviving structures are the only sources available. Combining the two, it appears that the most likely means of the transmission of the techniques of brick *muqarnas* construction from Iran to Anatolia was through the movement of skilled craftsmen over large areas seeking patrons.

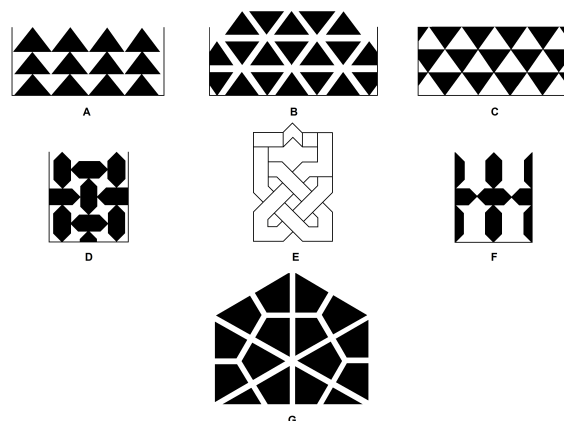


Figure 5: Sivas Great Mosque, minaret *muqarnas* patterns (flat section of cells) © R. McClary 2013



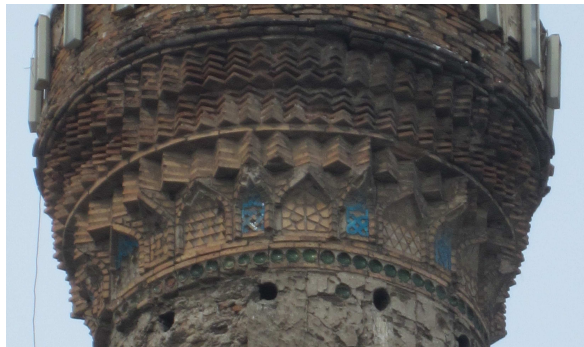


Figure 6: Sivas Great Mosque, minaret © R. McClary 2013

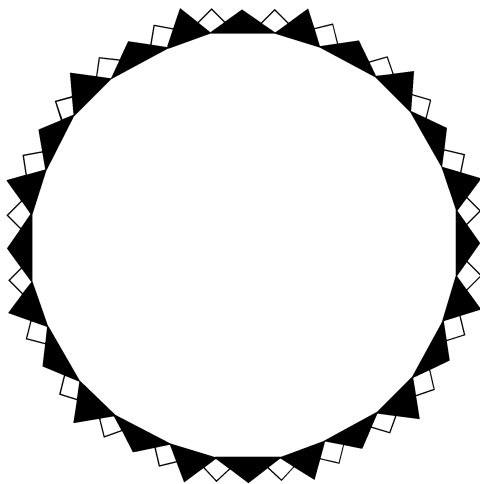


Figure 7: Sivas Great Mosque, minaret – muqarnas plan © R. McClary 2013

### Eğri Minaret, Aksaray

The Eğri minaret, in the centre of Aksaray, was constructed during the reign of the Rüm Saljuq Sultan 'Alā' al-Dīn Kay Qubādh I (r. 616-634 AH /1219-1237 CE) and was attached to the northwest corner of a now-lost mosque. The corbelling of the balcony is achieved through the use of two bands of *muqarnas* at the top of the shaft (fig. 8). The lower band consists of ten alternating wide, blind shallow recessed pointed arches interspaced with ten pairs of triangle plan cells forming a flat front to support a slightly wider single triangle plan cell in the band above (figs. 8 & 9). The cells and panels feature a wide variety of patterns consisting of vertical and horizontal bricks along with fragmentary remains of recessed turquoise glazed intarsia. The ten recesses between the single cells in the second tier consist of large tripartite cells creating

an irregular pentagonal plan. There are extensive losses, but the single cells in the upper row feature both square and rectangular glazed intarsia, one of which has a checkerboard pattern. The curved upper section of the projecting single cells feature inset glazed bowls of a similar kind to the ones in a band around the bottom of the muqarnas of the Sivas minaret. Above the two bands of cells the alternating wide V and narrow V shaped plan of the *muqarnas* continues up five courses of bricks before the cylindrical balcony section starts.

The *muqarnas* of the Eğri minaret, in particular the upper band, reveal a number of variations and inconsistencies from the idealised plan as shown in fig. 9. The irregularities in both the width of the cells and the alignment of cells from one course of bricks to the next are most likely due to the need to adapt the design to deviations from true in the curvature of the shaft upon which they are built however the problem of accessibility makes proving this through accurate measurement difficult.

The plans of the balconies of both the Sivas and the Aksaray minarets are stellate (figs. 7 & 9). The star plan is an unusual one and it may be the case that there is a link to the stellate plans of eastern minarets such as the Ghaznavid minaret of Mas'ūd III at Ghazna in Afghanistan (492-508 AH /1099-1115 CE) and the Ghūrid Quṭb Minār at Delhi, the lower section of which was completed by 599 AH /1202 CE.<sup>21</sup> The presence of Ghūrid style epigraphy on the Sivas minaret indicates a direct link between the two regions and the movement of craftsmen from Khorasan to Anatolia is the most like cause of any connection between such geographically distant structures.

The alternative method for creating the projection of minaret balconies in use in the 7<sup>th</sup>/13<sup>th</sup> century was to lay increasingly large circular courses of bricks laid flat and set at 45° to create a V profile on the face. This technique can be seen on the minarets of the Great Mosque (609 AH /1213 CE) and the Gūdūk Minare Mosque (624 AH /1227 CE) in Akşehir. It was the method that was chosen over *muqarnas* for the balcony projection of several later seventh/ thirteenth

century minarets, such as those of the Gök Madrasa and the Çifte Minare Madrasa in Sivas (both 670 AH / 1271-72 CE).<sup>22</sup> This decorative technique is one that can be seen in earlier Byzantine brick buildings and is first seen in minarets in the western border regions of the Rüm Saljuq empire. It is likely, but by no means certain, that the minarets with this style of balcony were built in the Iranian manner by teams of craftsmen that were largely, if not wholly, trained in the indigenous western Anatolian tradition of brick construction which had no history of *muqarnas* use.



Figure 8: Eğri Minaret, Aksaray © R. McClary 2013

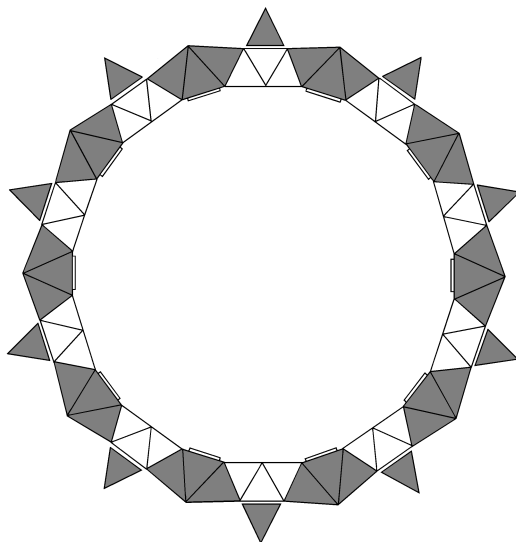


Figure 9: Eğri Minaret muqarnas plan (tier 1 white, tier 2 grey) © R. McClary 2013

### Melik Gazi Tomb, Pınarbaşı (Kayseri)

The Melik Gazi Tomb, although lacking secure epigraphic dating has been attributed on stylistic grounds to the end of the sixth/ twelfth century.<sup>23</sup> Elements of the tomb, including its square form, tripartite decoration and crude, shallow *muqarnas* can be compared to the Pir-i Takistan Tomb, built in Iran in the late sixth/ twelfth century.<sup>24</sup> The *muqarnas* are entirely decorative, with the aesthetic effect of articulating the four sides of the structure, in conjunction with the use of decorative brick bonds and voids in the rising mortar joints. There are two *muqarnas* compositions on each of the four sides of the building at the top of the tall, shallow recess panels. The *muqarnas* are perhaps the closest thing to external *muqarnas* hoods in brick to be found in Anatolia, with each hood consisting of four courses of cells (fig. 10).<sup>25</sup> The bottom course has five cells, the next four, then three, with the top being a single cell without the same degree of depth as all the others, and each row of cells consists of three courses of bricks. The cells consist of a flat back panel made of a full brick on top and bottom with two small square bricks with a void rising joint in the middle. This deep gap gives a further sense of depth to the cells. The sides are formed from bricks projecting at 45° to the back panel, a short one at the bottom, with twice the projection for the second course of bricks. The roof of the cell is formed from the use of two triangle shaped bricks that meet at their compound mitred tips. The unrepaired spandrels around the *muqarnas* also feature deep wide voids in the rising joints of the brickwork. When compared with other brick *muqarnas* of the period these ones have a rather crude angular appearance but viewed from afar the visual effect is not dissimilar to the more accomplished examples.

### ‘Izz al-Dīn Kay Kā’ūs I Hospital, Sivas - north *iwān* niches

The hospital, founded in 614 AH /1217 CE, is a large modified four *iwān* structure in the centre of Sivas with the tomb of the founder built into the south *iwān*. The *muqarnas* cells form the hood of the niches in the east and west walls of the north *iwān* of the hospital. They are similar to those used on the nearby minaret, as well as the tripartite cells of the later Eğri minaret in

Aksaray discussed above. There are three rows of cells, with the first row consisting of a triangle plan cell on the front of both sides, a rhombus in each corner with each cell separated by a blind pointed arch panel (fig. 12). All the cells are decorated with glazed and unglazed polygonal tiles in the form of triangles, lozenges, pentagons and hexagons. The form of the overall composition is strikingly similar to the shallower but somewhat larger niches on the exterior of the Mu'mine Khātūn Tomb in Nakhchivān, Azerbaijan (582 AH /1186 CE).<sup>26</sup>



Figure 10: Melik Gazi Tomb, Pinarbaşı © R. McClary 2013

The central blind panel of the bottom row consists of a mix of pentagons and lozenges in unglazed tiles. The remaining triangular spaces are filled with incised mortar triangles with six cuneiform like dots (fig. 11.C), a similar motif can also be seen on the external decoration of the Mu'mine Khātūn Tomb. The triangles with six dots are employed in the rising joint incisions nearby in the brick work of the walls of the north *iwān*, with two of the same triangles set tip to tip that helps to unify the broader decorative scheme of the building (fig. 11.E). The second row consists of three tripartite cells, while the third row is made up of two tripartite cells and two blind pointed arch panels. The area where the two cells meet in the middle is decorated with glazed turquoise triangles and curves forward in the manner of the fan vault like rhombus plan cells at Konya. The profiles of the cells are delineated on the face of the niche to create a form not dissimilar to a tripartite shouldered arch. This is surrounded by a pointed blind arch,<sup>27</sup> the spandrels of

which are decorated with hexagon based patterns consisting of both glazed and unglazed elements.

The bricks do not have rising mortar joint voids like most of the earlier examples, but the mortar joints are still accented in a different and entirely Iranian manner through the use of incised patterns.<sup>28</sup> The irregular shaped mortar joints between the intarsia in the spandrels are unique in Anatolian architecture and feature foliated and angular patterns<sup>29</sup> (figs. 11.A & B). Both the form and the location, but not the scale, of the foliate incisions can be seen in the incised stucco decoration of the zone of transition of the dome of the Masjid-i Jāmi' in Qurva, Iran, dated to the sixth/twelfth century.<sup>30</sup> The area between the edge of the *muqarnas* recess and the blind pointed arch around it has a few surviving examples of two types of rising joint decoration running in alternating diagonal bands, one of which (fig. 11.F) is a cruder version of one employed in both the Qurva mosque and the Masjid-i Jāmi' in Sujās, also thought to date from the sixth/twelfth century.<sup>31</sup> The quality of the patterns carved into the plaster in the spandrels in the Sivas niches are of a far higher quality than that of the rest of the mortar incisions in and around the niche. It is likely that they represent the hand of a more skilled craftsman than that of the one who executed most of the rising joints.<sup>32</sup> The only other surviving mortar incisions in Anatolia are on the octagonal central pillar in the crypt of the Mengücek Gazi Tomb at Kemah, dated to the late sixth/ twelfth century.<sup>33</sup> These mortar incisions are, like brick *muqarnas*, another decorative feature that originated in the architecture of Iran, was introduced into Anatolia, but not subsequently adopted by the craftsmen working there.

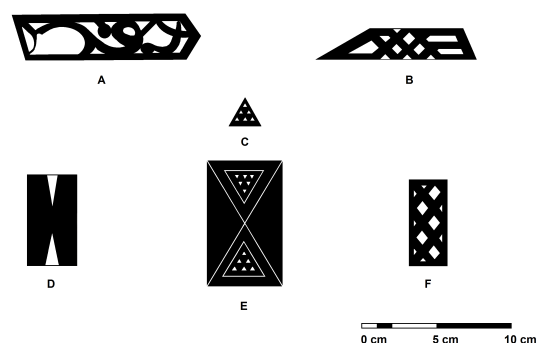


Figure 11: 'Izz al-Dīn Kay Ka'ūs I Hospital, Sivas – east niche mortar decoration © R. McClary 2013





Figure 12: 'Izz al-Dīn Kay Kā'ūs Hospital, Sivas – east niche in north iwān © R. McClary 2013

## Conclusion

The direct transfer of construction techniques from Iran to Anatolia through the migration of craftsmen was caused by the dual needs of both the craftsmen and the patrons. The death of Sultan Tughrul III in 590 AH /1194 CE led to political instability and war<sup>34</sup> with a concomitant decline in architectural patronage in Iran, resulting in many craftsmen needing to move to find work. In much the same way as scholars such as Muḥammad b. 'Alī Rāwandī sought the patronage of the Rûm Saljuqs<sup>35</sup> following the collapse of the Great Saljuq state, so did numerous administrators and craftsmen. Whether consciously on the part of the individuals or not, the effect of the process of movement of skilled labour was the introduction of a number of the characteristic aspects of Great Saljuq culture to Anatolia. During this period the Anatolian branch of the Saljuqs sought to establish themselves as the rightful heirs to the imperial prestige and the Rûm Saljuq court in Konya acquired an increasingly Persianate culture.<sup>36</sup> Both sultan Ghiyāth al-Dīn Kay Khusraw I and his son 'Izz al-Dīn Kay Kā'ūs I adopted an imperialist policy of expansionism in the early decades of the seventh/ thirteenth century.<sup>37</sup> It is during the rule of these two sultans in particular that a number of the brick buildings in the Iranian manner, such as the tomb and minaret in Sivas, were constructed. The style of architecture developed in the latter part of

the sixth/ twelfth century in north-western Iran, and Nakhchivān in particular, can be seen to have exerted a strong effect on the style of brick *muqarnas* subsequently constructed in the late sixth/ twelfth to early seventh/ thirteenth century in Anatolia.. As the corpus of *muqarnas* examined here has demonstrated, the process of cultural transfer included specific elements of architectural decoration that had been developed in the Greater Iranian region.

It is important to remember that the brick *muqarnas* are just one part of the decorative programme employed on the structures built across Anatolia, alongside the extensive use of stone, glazed tile and timber. The combination of Armenian, Georgian and Syrian stone construction methods, Iranian glazed tile and decorative brick techniques with Byzantine style exposed timber beams, often in the same structure, demonstrate the dynamic process of architectural synthesis that was taking place in Anatolia in the early seventh/ thirteenth century. Epigraphic evidence shows that craftsmen with different cultural backgrounds and architectural traditions, both Muslim and Christian, worked alongside each other in order to create a new architectural aesthetic.<sup>38</sup>

The use of brick *muqarnas*, with or without glazed intarsia, does not appear to have continued past the military defeat and subsequent political side-lining of the Saljuq sultans by the Mongols after the battle of Köseadağ, near Erzincan, in 641 AH /1243 CE.<sup>39</sup> In the final reckoning brick *muqarnas* can be seen as an element of Iranian architecture that was transplanted, flowered briefly, but never truly took root in Anatolia.

## Endnotes

1. See Doris Behrens-Abouseif, *Muqarnas*, in *The Encyclopaedia of Islam*, second edition, volume 7, Leiden 1993, pp. 501-506 for a general overview of *muqarnas*. Yvonne Dold-Samplonius, *Practical Arabic Mathematics: Measuring the Muqarnas by al-Kāshī*, in: *Centaurus; an international journal of the history of science and its cultural aspects*, vol. XXV no. 3, 1992, pp. 193-242 has an overview of the etymology of *muqarnas* and the various opinions of scholars such as Tabbaa and Grabar regarding the origin of the form. The author also provides a translation of al-Kāshī's description of *muqarnas* in his *Miftāḥ al-ḥisāb*, written in the fourteenth century.
2. See Oya Pancaroğlu, *The House of Mengücek in Divriği: Constructions of Dynastic Identity in the late Twelfth Century*, in: *The Seljuks of Anatolia: Court and Society in the Medieval Middle East*, ed. Andrew Peacock and Sara Nur Yıldız, London 2013, pp. 25-67 for details about the earliest examples of stone *muqarnas* in Anatolia.

3. Clifford Edmund Bosworth, *The New Islamic Dynasties, A chronological and genealogical manual*, Edinburgh 1996 lists all the dynasties and their rulers. The western region was under the control of the Laskarids while a portion of the Black Sea coast around Trebizond was under the control of the Comneni, both of which were Greek Christian dynasties. Cilicia, in the southwest, had an Armenian Kingdom with its capital at Sis.
4. Claude Cahen, *The Formation of Turkey: the Seljukid Sultanate of Rüm: Eleventh to Fourteenth century*, New York 2001, p. 163 states that a large number of Iranians from all walks of life moved to Rüm in the period prior to the Mongol conquest.
5. Sedat Çetintaş, *Sivas Darüşşifası 614-1217*, İstanbul 1953, pp. 13-14. The structure is dated by the band of epigraphy over the main portal.
6. Alicia Walker, *Middle Byzantine Aesthetics of Power and the Incomparability of Islamic Art: The architectural ekphrasis of Nikolaos Mesarites*, in: Muqarnas XXVII, 2011, pp. 79-101, p. 80 states that although there is no exact date, the patronage is securely anchored in the reign of Qilij Arslan II. Peter Ian Kuniholm, *Dendrokronoloji yöntemi ile tarih olmuştur Osmanlı anıtları*, in: *Osmanlı Arkeolojisi*, ed. U. Baram and L. Carroll, İstanbul 2004, pp. 100-141, p. 140 gives a date of 1174 CE based on dendro-chronological analysis of wood samples taken from the structure.
7. <http://www.gerty.ncl.ac.uk/photos.php>, image D\_098 (accessed 14/12/2013)
8. The use of an internal wood support structure can also be seen at the undated (but probably early seventh/ thirteenth century) Melik Sunullah Mosque minaret near Malatya which has fragmentary remains of a single row of muqarnas with a band of square green glazed intarsia below.
9. Walker 2011, *Middle Byzantine Aesthetics of Power*, p. 84.
10. Ibidem, pp. 80-84 for analysis of a contemporary written description of the lost structure. Walker suggests that the Byzantine building was modelled on the Konya kiosk and constructed around the time of the visit of Sultan Qilij Arslan II to the Byzantine court in 556 AH /1161 CE. The Palermo muqarnas are in wood, as, most likely, were the ones in Byzantium.
11. See Hakkı Önkol, *Anadolu Selçuklu Türbeleri*, Ankara 1996, pp. 142-145.
12. Michael Meinecke, *Fayencedekorationen seldschukischer Sakralbauten in Kleinasien*, Tübingen, 1976, vol. 2: p. 427. The date is based on an epigraphic panel held in the Sivas Museum.
13. Arthur U. Pope, *A Survey of Persian Art*, reprint, Ashiya 1981, vol. VIII, pl. 361 B.
14. See Anthony Hutt and Leonard Harrow, *Iran 1*, London 1977, p. 81 pl. 25.
15. The wide cells have an isosceles plan and the narrow one have an equilateral plan.
16. There are square holes in the same location on the Eğri minaret in Aksaray. Tariq Jawad al-Janabi, *Studies in Medieval Iraqi Architecture*, Baghdad 1982, p. 204 states that the coeval Jami' Qumriya in Baghdad also has the same feature for the use of scaffolding.
17. A single band of muqarnas with glazed intarsia, albeit it of a crude angular nature, above a band of green glazed bowls, can be seen on the Kesik Minaret in Aksaray. Although undated it appears to have been built in the period shortly after 1220. It also has square Kufic epigraphy repeating the word Muḥammad running around the shaft of the minaret at 45°. This motif is also seen in the tympanum of the arch above the entrance to the 'Izz al-Din Kay Kā'ūs I tomb built in 617 AH /1220 CE in the south iwan of the Sivas hospital. The Kesik minaret may well have been built by a regional emir attempting to achieve prestige by proxy through the imitation of decorative elements of the grander sultanate structures in Sivas.
18. Meinecke 1976, *Fayencedekorationen*, vol. 2: p. 461 suggests based on stylistic analysis, that the minaret is the work of Aḥmad bin Abū Bakr al-Marandi.
19. See Hutt and Harrow 1976, *Iran 1*, p. 79 pl. 23. The tomb features shallow muqarnas topped niches built up from simple brick elements.
20. For the purposes of brevity the term Iran is used to denote the lands that are now form all or part of the modern states of Iran, Iraq, Azerbaijan, Afghanistan, Uzbekistan and Turkmenistan. Due to the wide ranging nature of architectural motifs that cross the rather fluid political boundaries of the time, a geographical rather than dynastic approach seems more practical.
21. Ralph Pinder-Wilson, *Ghaznavid and Ghurid Minarets*, in: *Iran*, vol. 39, 2001, pp. 155-186, pp. 172-173 suggests that the form is derived from stellate planned tomb towers such as the Gunbad-i Qābūs. The tripartite (three horizontal bands, consisting of letters, then knotting and finally extended *hastae* with addorsed spear-like tips) knotted Kufic epigraphy on the shaft of the Sivas minaret and the façade of the tomb of 'Izz al-Din Kay Kā'ūs I can also be seen on the south east portal of the Ghurid Masjid-i Jami' in Herat of 598 AH /1201 CE. The use of star plans in a minaret context, along with similar epigraphic styles points to stylistic connections between the architecture of the Rüm Saljuqs and the Ghurids that require further investigation.
22. The truncated minarets of the Çifte Minare Madrasa in Erzurum have fragmentary remains of angular glazed muqarnas at the top of the shaft that are of a similar nature to those found at top of the Mu'mine Khātūn Tomb in Nakhchivān (582 AH /1186 CE) and the Kesik Minare Mosque minaret in Aksaray (c. early seventh/ thirteenth century). J. Michael Rogers, *Seljuk Architectural Decoration at Sivas*, in *The Art of Iran and Anatolia from the 11<sup>th</sup> to the 13<sup>th</sup> century AD*, Percival David Foundation of Chinese Art Colloquium on Art and Archaeology in Asia 4 (25-28 June 1973), ed. William Watson, London 1975, pp. 13-27, p. 13 states that the Erzurum Madrasa took about ten years to build and was all but finished by late summer 640 AH /1242 CE making it one of the last examples of the form in Anatolia. This dating is not universally accepted, and if the structure is later it may be considered something of an anachronistic unicum with regards to the use of brick muqarnas to corbel the minaret balconies.
23. Önkol 1996, *Anadolu Selçuklu Türbeleri*, p. 234.
24. Abbas Daneshvari, *A Stylistic and Iconographic Study of the Persian Tomb Towers of the Seljuk Period*, University of California, Los Angeles, (1972) [unpublished PhD thesis] p. 152 suggests the structure dates from the latter part of the sixth/ twelfth century, rejecting the date of 494 AH /1100 CE suggested in Robert Hillenbrand, *Saljuq Monuments in Iran: II. The "Pir" Mausoleum at Takistan*, in *Iran*, Vol. 10, 1972, pp. 45-55, p. 53.
25. The upper rows of all the muqarnas niches have been repaired, but enough of the original structure remains to allow for an understanding of their original form.
26. See Károly Gink and Ilona Turánszky, *Azerbaijan; Mosques, Towers, Palaces*, Budapest 1979, p. 8.
27. The current form of the point of the arch is the result of a rather poor restoration in recent years but enough of the original profile remains to determine that it was a pointed arch.
28. Hillenbrand 1972, *Saljuq Monuments in Iran*, p. 51 states that incised rising joints are first seen in the south dome of the Masjid-i Jami' in Isfahan, dated to 473 AH /1080-81 CE.
29. The process of cleaning during the recent restoration has unfortunately led to extensive losses to much of the detailed foliate elements.
30. Robert Hillenbrand, *Saljuq Dome Chambers of North-West Iran*, in *Iran*, vol. 14, 1976, pp. 93-102, p. 101 and pl. VIIIa. Qurva is 70km west of Qazvin.
31. Ibidem p. 101 and pl. Ivc
32. The need for working faster on the drying mortar of the rising joints of the large expanses of brick wall rather than the small individual sections between the tiles of the spandrel decoration may be another reason for the more precise nature of the incised patterns in the spandrels.
33. See Önkol 1996, *Anadolu Selçuklu Türbeleri*, pl. 56. The Kemah incisions are in rising joints and not foliated or knotted in the manner of the ones in the spandrels at Sivas. Pancaroğlu 2013, *The House of Mengüjek*, p. 42 gives the date as the 1190s CE.
34. Sara Nur Yıldız, *A nadīm for the Sultan: Rāwandī and the Anatolian Saljuqs*, in: *The Seljuks of Anatolia, Court and Society in the Medieval Middle East*, ed. Andrew Peacock and Sara Nur Yıldız, London 2013, pp. 91-111, p. 94.
35. Yıldız 2013, *A nadīm for the Sultan*, p. 102. Carole Hillenbrand, *Rāwandī, Muḥammad b. 'Alī in The Encyclopaedia of Islam, second edition, volume 8*, Leiden, 1995, pp. 460-61 states that Rāwandī is known to have been in Konya by 600 AH/ 1204 CE, the date he dedicated his *Rāḥat al-ṣudūr* to the Rüm Saljuq sultan.
36. Songül Mecit, *Kingship and Ideology under the Rüm Saljuqs*, in *The Seljuqs: Politics, Society and Culture*, ed. Christian Lange and Songül Mecit, Edinburgh 2011, pp. 63-78, pp. 69-70 argues that this change was due in part to the influence of the increasing number of Persian administrators and craftsmen entering the empire. Scott Redford, *13<sup>th</sup>-century Rüm Seljuq Palaces and Palace Imagery*, in *Pre Modern Islamic Palaces*, special issue of *Ars Orientalis*, vol. 23, 1993, pp. 219-239, pp. 154-5 cites the use of the names of Persian Kings and the use of Persian epic poetry

on the walls of Konya as evidence of the Persianate character of the Rûm Saljuq dynasty.

37. The Rûm Saljuqs captured the Mediterranean port of Antalya in 603 AH /1207 CE and the Black Sea port of Sinop in 611 AH / 1214 CE from the Byzantines. They (unsuccessfully) invaded the Ayyûbid ruled Aleppo Province in 615 AH /1218 CE. For an overview of the period see Cahen 2001, *The formation of Turkey*, pp. 47-65.
38. There are no textual sources to illuminate the nature of the construction industry in Anatolia during the seventh/ thirteenth century but a number of craftsmen's signatures show the presence of Greek and Georgian workers. Doğan Kuban, *The Miracle of Divriği, An Essay on the Art of Islamic Ornament in Seljuk Times*, Istanbul 2001, p. 82 states that the craftsman responsible for the *minbar* of the mosque and hospital complex in Divriği was from Tbilisi in Georgia. Scott Redford, *Sinop in the Summer of 1215: The Beginning of Anatolian Seljuk Architecture*, in: *Ancient Civilizations from Scythia to Siberia*, vol. 16, nos. 1-2, 2010, pp. 125-149, p. 131 gives the names of Sebastios, a Greek architect, along with that of a Syrian Muslim and two from Anatolia, all carved into different sections of the Sinop walls that were rebuilt in 612 AH/ 1215 CE following the conquest of the city the previous year. Thus what little evidence there is indicates that craftsmen of different traditions and religions were working side by side on building projects in Anatolia during the seventh/ thirteenth century.
39. The reasons for this remain unclear, as several brick structures with increased use of glazed decoration, such as the minarets of the Gök Madrasa in Sivas of 670 AH /1271-2 CE, were built after 641 AH /1243 CE without *muqarnas*. Instead, the corbelling is a result of increasingly large circular courses of bricks set at 45° to create a V shaped surface.

## Figures

Figure 1: Basic cell forms (black) and plans (grey) © R. McClary 2013

Figure 2: Qilij Arslân II Palace, Konya © R. McClary 2013

Figure 3: Table of Konya Palace *muqarnas* cells © R. McClary 2013

Figure 4: Bekar Sultan Tomb, Gülağaç - *muqarnas* © R. McClary 2013

Figure 5: Sivas Great Mosque, minaret *muqarnas* patterns (flat section of cells) © R. McClary 2013

Figure 6: Sivas Great Mosque, minaret © R. McClary 2013

Figure 7: Sivas Great Mosque, minaret – *muqarnas* plan © R. McClary 2013

Figure 8: Eğri Minaret, Aksaray © R. McClary 2013

Figure 9: Eğri Minaret *muqarnas* plan (tier 1 white, tier 2 grey) © R. McClary 2013

Figure 10: Melik Gazi Tomb, Pınarbaşı © R. McClary 2013

Figure 11: 'Izz al-Dīn Kay Kā'ūs I Hospital, Sivas – east niche mortar decoration © R. McClary 2013

Figure 12: 'Izz al-Dīn Kay Kā'ūs Hospital, Sivas – east niche in north *iwān* © R. McClary 2013

## Abstract

Although the majority of architectural *muqarnas* compositions constructed during the Rûm Saljuq period in Anatolia are in stone, there is a small and poorly understood corpus of brick *muqarnas* to be found in central and eastern Anatolia. This paper focuses on the earliest examples, dating from the last quarter of the sixth / twelfth century to the end of the first quarter of the seventh/ thirteenth century. The aim is to document the surviving examples as well as trace their connection to each other and their Iranian antecedents. The corpus of brick *muqarnas* is spread across an array of structural types, including minarets, tombs, a palace and a hospital. The use of brick *muqarnas* can be seen on both brick and predominantly stone structures; in many cases the *muqarnas* cells are accented with glazed tile.. By examining the style and decoration of the *muqarnas* compositions in relation to the broader decorative context of the structures of which they form part, a clearer picture of the probable origins of the craftsmen who made them emerges. The brick *muqarnas* are a form of architectural decoration that was not generally adopted in later Rûm Saljuq, Beylik or Ottoman architecture yet can be found on a number of prestigious, imperial structures from the early period of Islamic architecture in Anatolia.

## Author

Following numerous trips over the course of twenty years to the Middle East, Spain, India and North Africa Richard McClary enrolled in a Masters in Islamic Art and Archaeology at the School of Oriental and African Studies (SOAS) in London, which he completed in 2011. He has lectured on the topic of medieval Islamic architecture in Scotland, Belgium, Egypt and Ja-

pan, as well as at SOAS, the Royal Asiatic Society and the Victoria & Albert Museum in London. He is currently working on a PhD at the University of Edinburgh, researching the development of Saljuq architecture in Anatolia during the late twelfth and early thirteenth centuries, with a particular focus on the synthesis of the newly emerging style and the working methods of the craftsmen responsible.

### **Title**

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